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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,572	02/12/2002	Shahla Khorram	BP 2134	6557

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EXAMINER	
NGUYEN, DUC M	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,572	KHORRAM, SHAHLA	
	Examiner	Art Unit	
	Duc M. Nguyen	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC э 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim **15** is rejected under 35 U.S.C. 102(b) as being anticipated by **Kasamatsu** (US 5,825,770).

Regarding claim **15, Kasamatsu** discloses a programmable multistage amplifer comprises:

first programmable amplifier operably coupled to produce an amplified signal by amplifying an input signal in accordance with a first gain control signal (see Fig. 9 and col. 10, lines 15-42);

second programmable amplifier operably coupled to produce all outbound signal by amplifying the amplified signal in accordance with a second gain control signal (see Fig. 9 and col. 10, lines 15-42); and

control module operably coupled to generate the first and second gain control signals based on an optimization of at least one of: power level, noise factor, and linearity of the programmable multistage amplifier (see Fig. 9 and col. 10, lines 15-42).

Claim Rejections - 35 USC э 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **1-2** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Kosugi** (US Pat. Number **5,369,789**).

Regarding claim **1, Kosugi** discloses a transmitter having a programmable amplifier (see Fig. 3), comprises:

- up-conversion module (2) operably coupled to produce a radio frequency (RF) signal from an I component of a low intermediate frequency (1F) signal, Q component of the low IF signal, an I component of a local oscillation and a Q component of a local oscillation (see refs. 1, 2), wherein it is clear that the modulator 2 in Kosugi would obviously comprise I-Q components of a local oscillation in order to convert the modulator IF signal to the carrier RF signal for transmission ;
- programmable multistage amplifier (3) operably coupled to amplify, based on a distributed gain control signal, the RF signal to produce an outbound RF signal (see ref. 3); and
- control module (10) operably coupled to generate the distribute gain control signal based on an optimization of at least one of: power level, noise factor, and

linearity of the programmable multistage amplifier (see col. 5, line 32 - col. 6, line 23).

Regarding claim **2**, it is clear that **Kosugi** discloses first and second gain control signals as claimed (see Fig. 3).

5. Claims **1-3, 8-10, 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Leizerovich** (US Pat. Number **5,933,767**) in view of **Kasamatsu** (US 5,825,770).

Regarding claims **1, 15, Leizerovich** discloses a transmitter having a programmable amplifier (see Fig. 1), comprises:

- up-conversion module (106) operably coupled to produce a radio frequency (RF) signal from an I component of a low intermediate frequency (1F) signal, Q component of the low IF signal, an I component of a local oscillation and a Q component of a local oscillation (see refs. 1), wherein it is clear that the modulator 106 in **Leizerovich** would obviously comprise I-Q components of a local oscillation in order to convert the modulator IF signal to the carrier RF signal for transmission ;
- a programmable amplifier (118) operably coupled to amplify, based on a distributed gain control signal, the RF signal to produce an outbound RF signal (see Fig. 1); and

- control module (134) operably coupled to generate the distribute gain control signal based on an optimization of at least one of: power level, noise factor, and linearity of the programmable amplifier (see col. 5, line 32 - col. 6, line 23).

However, **Leizerovich** fails to discloses a multistage for the amplifier. However, in an analogous art, **Kasamatsu** discloses a programmable multistage amplifier (see Fig. 9). Since using a multistage amplifier would increase/improve the dynamic range of an amplifier, it would have been obvious to one skilled in the art at the time the invention was made to provide the above teaching Kasamatsu to Leizerovich for incorporating a multistage amplifier as claimed, for improving the dynamic range of the amplifier so that it can operate in a multi-mode communication system.

Regarding claim **2**, it is clear that **Leizerovich** as modified would disclose first and second gain control signals as claimed (see Kasamatsu, Fig. 9).

Regarding claim **8**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, since **Leizerovich** also discloses a receiver (see Fig. 1), it is clear that **Leizerovich** would disclose a down converter and an oscillator as claimed, in order to convert an RF signal to I-Q IF signal for processing.

Regarding claim **9**, it is clear that **Leizerovich** as modified would disclose a multistage amplifier with first and second gain control signals as claimed (see Kasamatsu, Fig. 9).

Regarding claim **3, 10, 16**, the claims are rejected for the same reason as set forth in claim 1 above. In addition, **Leizerovich** further disclose a test signal for tuning

the gain of the amplifier to a prescribed range, which would obviously comprise all features as recited in the claims (see **Leizerovich,** col. 3, line 25 – col. 4, line 47).

6. Claims **4, 11, 17** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Leizerovich** in view of **Kasamatsu** and further in view of **Berman** et al (US 4,857,865).

Regarding claims **4, 11, 17**, the claims are rejected for the same reason as set forth in claim 1 above. However, **Leizerovich** fails to disclose a test signal to test linearity of the amplifier. However, since tuning the amplifier so that its operating point is in the linear range is disclosed by **Kasamatsu** (see col. 11, lines 17-22), one skilled in the art would recognize that such test signal could be used for tuning the gain of the amplifier to a prescribed range that optimize the linearity performance of the amplifier. By doing so, it would have been obvious to one skilled in the art at the time the invention was made to further use a series of varying power level test signal for tuning an amplifier as disclosed by **Berman** (see col. 3, line 49 – col. 4, line 21). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further incorporate the above teaching of Berman to Kasamatsu and Leizerovich for providing a test signal with varying power levels as claimed, in order to tune the amplifier to the linear operating range, for improving the performance of the multistage amplifier.

7. Claims **5-6, 12-13, 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Leizerovich** in view of **Kasamatsu** and further in view of **Prentice** et al (US 2002/0086651).

Regarding claims **5, 12, 18**, the claims are rejected for the same reason as set forth in claim 3 above. However, **Leizerovich** fails to disclose a test signal to test noise level of the amplifier. However, it is noted that when implementing a gain control function in AGC amplifiers, it is desired that they have excellent noise and linearity (see **Prentice**, page 5, [0046], lines 9-13). Therefore, one skilled in the art would recognize such a correlation between gain control, linearity and noise figure on the optimum performance of an amplifier. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further modify Leizerovich's test signal for using a noise source as a test signal to test the noise factor of the amplifier, thereby providing a tuning process based on noise level as claimed, for improving the performance (noise figure) of the multistage amplifier.

Regarding claims **6, 13, 19**, the claims are rejected for the same reason as set forth in claim 5 above. In addition, it would have been obvious that one skilled in the art would recognize that a null signal would have similar characteristics of a noise source. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further modify Leizerovich's test signal for using a null signal as a test signal to test the noise factor of the amplifier.

8. Claims **7, 14, 20** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Leizerovich** in view of **Kasamatsu** and **Prentice** as applied to claim 5, and further in view of **Stewart** et al (US 5,812,557).

Regarding claims **7, 14, 20**, the claims are rejected for the same reason as set forth in claim 5 above. In addition, as mentioned in claim 5 above, one skilled in the art would recognize the correlation between gain control, linearity and noise figure on the optimum performance of an amplifier. Since combining signal attenuating testing, noise level testing, and signal distortion testing into one simple, practical test is known as disclosed by **Stewart** (see col. 19, lines 32-34), it would have been obvious to one skilled in the art at the time the invention was made to further modify Leizerovich's test signal for utilizing a test signal to test a combined power level, noise level and linearity (distortion) that provides an optimum operating point for the amplifier as well, thereby providing a combined tuning process as claimed, for further optimizing the performance of the multistage amplifier.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US005970429A to **Martin**,

US006725021B1 to **Anderson** et al,

US006819938B2 to **Sahota**,

US006256483B1 to **Moerder** et al,

US005507017A to **Whitmarsh** et al,

US006650875B1 to **Rozenblit** et al,

US006393372B1 to **Rzyski**,

US005347222A to **Fox** et al,

US006418301B1 to **Lee** et al, and

US 20020193078A1 to **MacFarlane Shearer**, III et al.

10. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(571) 273-8300 (for formal communications intended for entry)

(571)-273-7893 (for informal or draft communications).

Hand-delivered responses should be brought to Customer Service Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (571) 272-7893, Monday-Thursday (9:00 AM - 5:00 PM).

Or to Edward Urban (Supervisor) whose telephone number is (571) 272-7899.

Duc M. Nguyen
Sept 28, 2005